was able to walk with the body well raised off the ground are the following: (1) Inability to flex strongly the elbows, evidenced by the characters of the distal facet of the humerus. (2) Ability to turn the femur well forward, like that of carnivorous dinosaurs. (3) Detailed resemblances of the femur to that of *Stegosaurus*, assuredly a straight-limbed reptile. (4) Total dissimilarity between the humerus and femur of sauropods and those of primitive Permian reptiles.

PLATO'S ATLANTIS IN PALAEOGEOGRAPHY

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The classic story of Atlantis has been supposed by some writers to be a genuine tradition, and to be supported by scientific evidence, which they believe indicates a land bridge across the Atlantic in former geologic times. The island of Atlantis as described by Plato they suppose to be a remnant of this bridge. Examination of the story in detail shows that it is a fable, and that the scientific evidence does not lend any support whatsoever to it nor vice versa.

The existence of a transatlantic bridge in Tertiary or pre-Tertiary times is a legitimate scientific question, which should not be confused with the fabulous story of Plato. The present writer does not, however, believe that such bridges are necessary. Their existence during the Tertiary period cannot apparently be reconciled with the known history of vertebrate evolution on the two sides of the Atlantic. The supposed arguments in their favor from the distribution of certain lower animals and plants can all be otherwise explained; and the arguments that favor a general permanency of the ocean basins afford grave objections to any such bridges, especially of such recent date, geologically.

Transatlantic bridges in pre-Tertiary times are theoretically more plausible simply because there is less positive evidence against them. The evidence adduced in their favor appears to be similar in kind to that for Tertiary land bridges, and not any more convincing. If in the one case it must be otherwise interpreted, then it should be so in the other.

The conformation of the bottom of the Atlantic is very little suggestive of any former bridges, except in the extreme north (from Newfoundland to Ireland, or across Greenland, Iceland and Scandinavia). A long, depressed, irregular trough or series of "deeps" on each side fronts the continental borders which are areas of elevation and erosion. These deeps may have been formed by the withdrawal of material that has gone to build up the lighter fragmented rocks of the continental platform borders, aided by the loading of heavier calcareous and ferruginous deep-sea deposits. Since the principal elevation and erosion of the continental border strips fronting the Atlantic took place during the Palæozoic, it is suggested that the present conformation of the Atlantic bottom dates back in part at least to that era.

THE IONIZATION AND ACTIVITY OF LARGELY IONIZED SUBSTANCES

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In applications of the ionic theory of solutions it is customary to employ, in accordance with the original hypothesis of Arrhenius, as a measure of the degree of ionization of salts, acids, and bases, the ratio of the equivalent conductance of the substance at any given concentration to the limiting value of the equivalent conductance as the concentration approaches zero, where the ionization may be assumed to be complete.

This assumption, however, is not a necessary conclusion from the fundamental theory of ionic conduction. According to this theory, the equivalent conductance Λ (which is by definition the quantity of electricity which under a potential-difference of one volt passes per second between electrodes of indefinite extent 1 cm. apart, between which is placed that quantity of solution which contains one equivalent weight of the ionizing substance) is for a uniunivalent substance given by the expression $\Lambda = \gamma F(U^+ + U^-)$, in which γ is the fraction of the substance ionized (equal in this case to the number of equivalents of each ion present in the solution), F the quantity of electricity (96,500 coulombs) associated with each equivalent of ion, and U^+ and U^- the mobilities of the positive and negative ions (that is, their velocities through the solution under a potential-gradient of one volt per centimeter). For the equivalent conductance Λ_o at zero concentration, where the ionization becomes complete, we have the corresponding expression $\Lambda_o = F(U_o{}^+ + U_o{}^-)$. Combining these two equations we get

$$\frac{\Lambda}{\Lambda_o} = \gamma \frac{U^+ + U^-}{U_o{}^+ + U_o{}^-}.$$

From this equation it is evident that Λ/Λ_o is equal to the ionization only when the mobilities of the ions can be assumed constant up to the concentration under consideration. That they should remain constant so long as the solution does not differ appreciably from water as a viscous medium, may seem reasonable; but, in view of possible electrical effects resulting from the large electric charges on the ions, it is by no means certain.